JAPANESE [JP,11-163377,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE INVENTION TECHNICAL PROBLEM MEANS DESCRIPTION OF DRAWINGS DRAWINGS

[Translation done.]

CLAIMS

[Claim(s)]
[Claim 1] A solar cell module which a photovoltaic cell which has an electrode which contained phosphorus compounds in a light-receiving side side is the solar cell module which it comes to cover by translucency resin containing phosphorus compounds, and is characterized by the Lynn content of said translucency resin being less than 0.2 weight percents.
[Claim 2] A solar cell module which a photovoltaic cell which has an electrode which contained phosphorus compounds in a light-receiving side side is the solar cell module which it comes to cover by translucency resin containing phosphorus compounds, and is characterized by the Lynn content of said light-receiving side lateral electrode being less than 2.6 weight percents.
[Claim 3] A solar cell module which a photovoltaic cell which has an electrode which contained phosphorus compounds in a light-receiving side side is the solar cell module which it comes to cover by translucency resin containing phosphorus compounds, and is characterized by the Lynn content of said translucency resin being less than 0.2 percentage by weight while the Lynn content of said light-receiving side lateral electrode is less than 2.6 percentage by weight.
[Claim 4] A photovoltaic cell which has an electrode which contained phosphorus compounds in a light-receiving side side is the solar cell module which it comes to cover by translucency resin containing phosphorus compounds, and it is PEVA about the Lynn content of said translucency resin. It is Ppas about the Lynn content of a light-receiving side lateral electrode which carried out and consisted of conductive pastes. A solar cell module which carries out and is characterized by fulfilling conditions of Ppas+13PEVA <=2.6 (however, PPAS!=0, PEVA!=0).
[Claim 5] A solar cell module which is a solar cell module given in either from claim 1 to claim 4, and is characterized by the Lynn content being less than 0.2 weight percents only about the wrap aforementioned translucency resin about a light-receiving side side of a photovoltaic cell.
[Claim 6] A solar cell module characterized by being resin with which it is the solar cell module of a publication, said light-receiving side lateral electrode contains silver in either from claim 1 to claim 5, and said translucency resin becomes it from an ethylene-vinyl acetate system copolymer (EVA).
[Claim 7] A manufacture method of a solar cell module which carries out the feature of controlling diffusion to said translucency resin of a metal component which is the method of manufacturing a solar cell module by covering a photovoltaic cell with translucency resin containing phosphorus compounds after forming an electrode at least in one side of front reverse side both sides of a substrate of a photovoltaic cell with a conductive paste containing phosphorus compounds, and is contained in said electrode by adjusting the Lynn content of said translucency resin.
[Claim 8] A manufacture method of a solar cell module characterized by being the method of manufacturing a solar cell module by covering a photovoltaic cell with translucency resin containing phosphorus compounds after forming an electrode at least in one side of front reverse side both sides of a substrate of a photovoltaic cell with a conductive paste containing phosphorus compounds, and the Lynn content covering a SU photovoltaic cell, using translucency resin of less than 0.2 percentage by weight as said translucency resin.
[Claim 9] A manufacture method of a solar cell module which carries out the feature of controlling diffusion to said translucency resin of a metal component which is the method of manufacturing a solar cell module by covering a photovoltaic cell with translucency resin containing phosphorus compounds after forming an electrode at least in one side of front reverse side both sides of a substrate of a photovoltaic cell with a conductive paste containing phosphorus compounds, and is contained in said electrode by adjusting the Lynn content of said electrode.
[Claim 10] A manufacture method of a solar cell module characterized by being the method of manufacturing a solar cell module by covering a photovoltaic cell with translucency resin containing phosphorus compounds after forming an electrode at least in one side of front reverse side both sides of a substrate of a photovoltaic cell with a conductive paste containing phosphorus compounds, and the Lynn content forming an electrode, using a conductive paste of less than 2.0 percentage by weight as said conductive paste.
[Claim 11] After forming an electrode at least in one side of front reverse side both sides of a substrate of a photovoltaic cell with a conductive paste containing phosphorus compounds, It is the method of manufacturing a solar cell module by covering a photovoltaic cell with translucency resin containing phosphorus compounds. A manufacture method of a solar cell module characterized by the Lynn content covering a photovoltaic cell, using translucency resin of less than 0.2 percentage by weight as translucency resin while the Lynn content forms an electrode, using a conductive paste of less than 2.0 percentage by weight as a conductive paste.

[Claim 12] After forming an electrode at least in one side of front reverse side both sides of a substrate of a photovoltaic cell with a conductive paste containing phosphorus compounds, By covering a photovoltaic cell with translucency resin containing phosphorus compounds, it is the method of manufacturing a solar cell module, and is PEVA about the Lynn content of said translucency resin. It carries out and is Ppas about the Lynn content of said conductive paste. It carries out. A manufacture method of a solar cell module characterized by using translucency resin and a conductive paste which fulfill conditions of Ppas+10PEVA <=2 (however, PPAS!=0, PEVA!=0).

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] This invention relates to the technology of starting a solar cell module and its manufacture method, especially preventing the discoloration deterioration in long-term use.
[0002]
[Description of the Prior Art] From the rise of consciousness to an environmental problem in recent years, the solar battery with safety and reliability attracts attention as a clean energy source.
[0003] Drawing 6 is the cross section showing the structure of the outline of the conventional typical silicon system solar cell module. In order to make structure intelligible, hatching which shows a cross section is omitted. Generally a surface [of the solar-battery cell block 600 which wired a serial or juxtaposition through lead wire 602 in the photovoltaic cell 601], and rear-face side (light-receiving side side) is put by translucency resin 603a and 603b, such as an ethylene-vinyl acetate system copolymer (EVA), and the translucency glass 604 by the side of a light-receiving side is made to paste by heating sticking by pressure. At this time, the moisture proof protection film 605 is formed in a rear face. Thus, the periphery of an object is really which was produced surrounded by the sealant 606, a frame 607 is attached, and a solar cell module is completed.
[0004] Drawing 7 is the cross section showing the more detailed structure of the photovoltaic cell 601 which is the component of a solar cell module. In order to make structure intelligible, hatching which shows a cross section is omitted. the silicon substrate 701 in which pn junction 702 was formed -- receiving -- the light-receiving side side -- TiO2 etc. -- after forming an antireflection film 703, aluminum system paste material and silver system paste material are printed and calcinated at a rear-face side, and silver system paste material is printed and calcinated at a light-receiving side side, and an electrode 704,705 is formed, respectively. Then, the solder block 706 was formed by coating so that it might be covered to the electrode 705 by the side of a light-receiving side, by melting and solidification with the solder block 706 and lead wire 602, wiring between photovoltaic cells 601 was performed and the solar-battery cell block 600 was formed.
[0005] The electrode 705 by the side of a light-receiving side penetrates an antireflection film 703 by heat treatment, and touches the surface of a silicon substrate 701. The silver system paste which constitutes the electrode 705 by the side of a light-receiving side is a kind of a conductive paste. In order to realize low contact resistance with a silicon substrate surface, it is common to make phosphorus compounds contain to the conductive paste which constitutes the electrode by the side of a light-receiving side, as shown in JP,3-469850,B. as typical phosphorus compounds -- P2O5 P2O4 etc. -- phosphorus oxide and Ag3PO4 Pyrophosphoric-acid silver etc. is used.
[0006] It is common to add phosphorus compounds for a photovoltaic cell 601 to translucency resin 603a and 603b, such as wrap EVA, on the other hand for antioxidizing. As a Lynn system antioxidant, tris (nonylphenyl) phosphite has the high antioxidizing effect, and is well used as an EVA sheet for solar batteries.
[0007] That is, Lynn contains the photovoltaic cell also at wrap translucency resin also in the conductive paste which constitutes a light-receiving side lateral electrode.
[0008]
[Problem(s) to be Solved by the Invention] It is anxious for skipping the solder coating production process which adds the wrap solder block 706 for the light-receiving side lateral electrode 705 in a cel-ized process from low-cost-izing of a solar cell module, and a viewpoint of an environmental consideration in recent years.
[0009] However, if it is in the solar cell module which skipped and produced the solder coating production process simply from the conventional technology, the solder block 706 will not cover the electrode 705 by the side of a light-receiving side, but an electrode 705 and translucency resin 603a will contact directly. That becomes a factor, discoloration (yellowing) occurs in a long-term reliability trial in translucency resin 603a of the portion which is directly in contact with the electrode 705, and there is a problem of causing a fall and poor appearance of the conversion efficiency of the photo electric conversion of a solar battery.
[0010] yellowing -- if it analyzes, colored translucency resin, i.e., EVA resin, -- yellowing -- silver was detected from the portion. the silver with which this is contained in the light-receiving side lateral electrode 705 -- EVA resin -- being spread -- a compound ---izing -- yellowing -- it is thought that coloring is produced.
[0011] If it was in the conventional solar cell module shown in drawing 6 and drawing 7 , since the solder block 706 for connecting lead wire 602 to the light-receiving side lateral electrode 705 had covered the

light-receiving side lateral electrode 705, it had controlled that the silver component in the light-receiving side lateral electrode 705 was spread into translucency resin 603a.
[0012] therefore, the conventional solar cell module -- setting -- yellowing of EVA resin (translucency resin 603a) -- in order to avoid coloring, not going the light-receiving side lateral electrode 705 to the reason for losing a wrap configuration with the solder block 706, but skipping a solder coating production process was being unable to do as a matter of fact.
[0013] It is originated in view of such a situation, and this invention prevents generating of discoloration of the translucency resin after a long-term reliability test, and aims at skipping a solder coating production process as the result.
[0014]
[Means for Solving the Problem] An artificer of this invention found out that a degree of diffusion of a photovoltaic cell, such as silver to translucency resin, such as wrap EVA resin, was dependent on an interrelation of the Lynn content translucency resin's, the Lynn content a conductive paste's, or the both Lynn content through various experiments from a light-receiving side lateral electrode formed with conductive pastes, such as a silver system paste.
[0015] A solar cell module concerning this invention has the configuration covered by translucency resin by which a photovoltaic cell which has an electrode which contained phosphorus compounds in a light-receiving side side contained phosphorus compounds. Phosphorus compounds in an electrode are required because of low contact resistance of the photovoltaic cell surface and a light-receiving side lateral electrode, and phosphorus compounds in translucency resin are required because of antioxidizing.
[0016] As for a solar cell module of claim 1 concerning this invention, the Lynn content of translucency resin is less than 0.2 percentage by weight. Even if it covers a light-receiving side lateral electrode neither with solder nor a resin film, discoloration (yellowing) of translucency resin [/ near the light-receiving side lateral electrode] is lost, and conversion efficiency of a solar battery will become high. Since a solder coating production process can be skipped, productivity is good and simplification of a cost cut and structure is attained.
[0017] As for a solar cell module of claim 2 concerning this invention, the Lynn content of a light-receiving side lateral electrode is less than 2.6 percentage by weight. Like the above, even if it covers a light-receiving side lateral electrode neither with solder nor a resin film, discoloration (yellowing) of translucency resin [/ near the light-receiving side lateral electrode] is lost, and conversion efficiency of a solar battery will become high. Since a solder coating production process can be skipped, productivity is good and simplification of a cost cut and structure is attained.
[0018] While the Lynn content of a light-receiving side lateral electrode is less than 2.6 percentage by weight, as for a solar cell module of claim 3 concerning this invention, the Lynn content of translucency resin is less than 0.2 percentage by weight. Even if it covers a light-receiving side lateral electrode neither with solder nor a resin film, discoloration (yellowing) of translucency resin [/ near the light-receiving side lateral electrode] is lost, conversion efficiency of a solar battery will become high, but since a component of both sides of a conductive paste and translucency resin is adjusted, the possibility of discoloration (yellowing) of translucency resin almost disappears. Of course, a solder coating production process can be skipped.
[0019] A solar cell module of claim 4 concerning this invention is PEVA about the Lynn content of translucency resin. It is Ppas about the Lynn content of a light-receiving side lateral electrode which carried out and consisted of conductive pastes. It carries out and conditions of Ppas+13PEVA <=2.6 (however, PPAS!=0, PEVA!=0) are fulfilled. Lynn content PEVA in translucency resin Lynn content Ppas in a light-receiving side lateral electrode Discoloration (yellowing) of translucency resin which poses a problem practically completely disappears from giving specific relation in between. Of course, a solder coating production process can be skipped.
[0020] As for a solar cell module of claim 5 concerning this invention, in either to claim 4, the Lynn content is less than 0.2 percentage by weight from above-mentioned claim 1 only about wrap translucency resin about a surface side of a photovoltaic cell. Since prevention of discoloration (yellowing) of translucency resin near the light-receiving side lateral electrode is a technical problem, it is enough if a quality governing is carried out only about translucency resin by the side of the surface.
[0021] In either from claim 1 to claim 5, said light-receiving side lateral electrode contains silver, and a solar cell module concerning claim 6 of this invention consists of resin with which said translucency resin consists of an ethylene-vinyl acetate system copolymer (EVA). Thus, even if a general thing as a material which constitutes a solar cell module is used for this invention, it demonstrates an effect of preventing discoloration (yellowing) of translucency resin, as expected.
[0022] A manufacture method of a solar cell module concerning this invention is a method of manufacturing a solar cell module, by covering a photovoltaic cell with translucency resin containing phosphorus compounds, after forming an electrode at least in one side of front reverse side both sides of a substrate of a photovoltaic cell with a conductive paste containing phosphorus compounds.
[0023] A manufacture method of a solar cell module of claim 7 concerning this invention has controlled diffusion to said translucency resin of a metal component contained in said electrode by adjusting the Lynn content of said translucency resin. Since diffusion to said translucency resin of a metal component contained in an electrode by easy method of adjustment of the Lynn content in translucency resin is controlled, improvement in productivity and a cost cut of a product can be aimed at.
[0024] The Lynn content of a manufacture method of a solar cell module of claim 8 concerning this invention is a wrap thing about front reverse side both sides of a photovoltaic cell, using translucency resin

of less than 0.2 percentage by weight as translucency resin. A solder coating production process can be skipped, and yet, discoloration (yellowing) of translucency resin near the light-receiving side lateral electrode can be prevented, and conversion efficiency of a solar battery can be made high. By the abbreviation of a solder coating production process, improvement in productivity and a cost cut of a product can be aimed at.
[0025] Since a manufacture method of a solar cell module of claim 9 concerning this invention has controlled diffusion to said translucency resin of a metal component contained in an electrode by adjusting the Lynn content of a light-receiving side lateral electrode, it can aim at improvement in productivity, and a cost cut of a product.
[0026] As for a manufacture method of a solar cell module of claim 10 concerning this invention, the Lynn content forms an electrode, using a conductive paste of less than 2.0 percentage by weight as a conductive paste. A solder coating production process can be skipped, and yet, discoloration (yellowing) of translucency resin near the electrode can be prevented, and conversion efficiency of a solar battery can be made high. By the abbreviation of a solder coating production process, improvement in productivity and a cost cut of a product can be aimed at.
[0027] While, as for a manufacture method of a solar cell module of claim 11 concerning this invention, the Lynn content forms an electrode, using a conductive paste of less than 2.0 percentage by weight as a conductive paste, the Lynn content is a wrap thing about a photovoltaic cell, using translucency resin of less than 0.2 percentage by weight as translucency resin. by adjusting a component of both sides of a conductive paste and translucency resin, the possibility of discoloration (yellowing) of translucency resin should lose almost -- **. Of course, improvement in productivity and a cost cut of a product can be aimed at by the abbreviation of a solder coating production process.
[0028] A manufacture method of a solar cell module of claim 12 concerning this invention is PEVA about the Lynn content of translucency resin. It carries out and is Ppas about the Lynn content of a conductive paste. It carries out and translucency resin and a conductive paste which fulfill conditions of Ppas+10PEVA <=2 (however, PPAS!=0, PEVA!=0) are used. Lynn content PEVA in translucency resin since specific relation is given between the Lynn content Ppas under conductive paste, completely lose discoloration (yellowing) of translucency resin which poses a problem practically -- **. Of course, improvement in productivity and a cost cut of a product can be aimed at by the abbreviation of a solder coating production process.
[0029]
[Embodiment of the Invention] Hereafter, the gestalt of operation of the solar cell module concerning this invention and its manufacture method is explained to details based on a drawing.
[0030] The cross section showing the structure of the outline of the crystal silicon system solar cell module which drawing 1 requires for the gestalt of 1 operation of this invention, and drawing 2 are the cross sections showing the structure of the photovoltaic cell which is the component of a solar cell module. In order to make structure intelligible, hatching which shows a cross section is omitted.Drawing 3 is the flow chart of the outline which shows the typical production process of the manufacture method of a solar cell module.
[0031] (1) Wash about 400 micrometers in thickness, and p mold crystal silicon substrate 201 of 1-5ohms of specific resistance cm. Next, using a NaOH aqueous solution and the mixed liquor of isopropyl alcohol, texture etching is performed at about 90 degrees C of solution temperature, and the irregularity of the shape of a minute pyramid with a height of several micrometers is formed in the substrate surface. This is a production process 1.
[0032] A method, dry etching, etc. which may use the solution which added isopropyl alcohol etc. to alkali, such as KOH(s) other than NaOH, as an option which forms irregularity in the substrate surface, and form many slots of 10 micrometers of depth numbers in the substrate surface at parallel using dicing equipment or laser are sufficient. Minute irregularity is formed in the substrate surface for reducing the rate which the light which carried out incidence reflects on the substrate surface.
[0033] (2) Move a silicon substrate 201 to a quartz tube furnace, and it is POCl3. By the gaseous-phase diffusion method to depend, pn junction 202 is formed in a depth of 0.3-0.5 micrometers by performing heat treatment for 10 - 30 minutes at 800-950 degrees C. This is a production process 2.
[0034] As an option which forms pn junction, the diffusion method using the spreading liquid containing the compound of Lynn etc. is sufficient.
[0035] (3) Use an ordinary pressure CVD method after that, and it is TiO2 of 6x10-2 to 9x10 to 2 micrometer thickness. The film was formed and it considered as the antireflection film 203. This is a production process 3.
[0036] As an option, a plasma-CVD method is used and it is Si3N4 of 8x10-2 to 10x10 to 2 micrometer. A film may be formed. In addition, formation of an antireflection film may be performed after formation of an electrode.
[0037] (4) Further, junction isolation was performed, next the conductive paste was printed with screen printing, respectively to the rear face and light-receiving side (surface) of a silicon substrate 201, was calcinated to them, the rear-face electrode 204 of 10 micrometers of thickness numbers and the light-receiving side lateral electrode 205 were formed, respectively, and the photovoltaic cell 101 was completed. This is a production process 4.
[0038] As an option which forms an electrode, although vacuum evaporationo, plating, etc. are sufficient, the screen printing which uses a conductive paste is advantageous in respect of low-cost-izing.
[0039] Although gold, silver, copper, aluminum, etc. were generally used for the metal component of a conductive paste, with the gestalt of this operation, the silver paste was used for the light-receiving side, and phosphorus compounds were added 65 - 84wt% in the end of silver dust including nature vehicle 15 of

glass frit 1.0 - 5.0wt% and organic - 30wt% so that the Lynn content might become 0 - 4wt% further. The example of the Lynn content is 4.0wt% 2.0wt% 1.0wt% 0.5wt% 0.1wt% 0.01wt% 0.001wt% 0wt%. here -- as phosphorus compounds -- P2O5 Ag3PO4 etc. -- it added. "wt%" is "% of the weight" and consent, and expresses the rate of the weight of an additive to AUW with percentage.
[0040] The solder coating production process for forming a solder block like [in the case of the conventional technology] is not carried out.
[0041] (5) When one side of metal pieces, such as copper with a thickness of 100-200 micrometers, applied flux to the surface of the whole surface ******** lead wire 102 with the solder of 20 - 50-micrometer thickness etc. and heated for 1 - 5 seconds at the temperature of 220-300 degrees C on the electrode of a photovoltaic cell 101 further, lead wire 102 was pasted up. This is a production process 5.
[0042] (6) The I-V property was measured by the solar simulator for what connected lead wire 102 to the photovoltaic cell 101. This is a production process 6.
[0043] Subsequently, the solar cell module was produced as follows.
[0044] (7) The solar-battery cell block 100 was produced by connecting a photovoltaic cell 101 first, with the lead wire 102 arranged to a serial or juxtaposition so that a desired output may be obtained. This is a production process 7.
[0045] (8) While arranging 1st translucency resin 103a and translucency glass 104 in the light-receiving side side (surface side) of the solar-battery cell block 100 2nd translucency resin 103b and the rear-face member 105 as a moisture proof protection film are arranged in the rear-face side of the solar-battery cell block 100. At the temperature of 120-160 degrees C by the vacuum lamination for 5 - 50 minutes Heating sticking by pressure of the solar-battery cell block 100, 1st translucency resin 103a, translucency glass 104, 2nd translucency resin 103b, and the rear-face member 105 was carried out, and it was further left for 5 - 50 minutes at the temperature of 120-160 degrees C in ordinary pressure. This is a production process 8.
[0046] The weatherproof bright film which replaces with translucency glass 104 and consists of a fluororesin etc. may be used. The rear-face member 105 protects a photovoltaic cell 101 from moisture, and consists of members which coated the table rear face of aluminum foil with the fluororesin etc. In addition, the processing by the above-mentioned ordinary pressure may be omitted.
[0047] (9) Close the periphery section of translucency glass 104 and the rear-face member 105 by the sealant 106, and perform end-face processing. This is a production process 9.
[0048] (10) The frame 107 which consists of aluminum etc. is further attached in the perimeter. This is a production process 10.
[0049] (11) The external terminal (not shown) for taking out the generated electrical and electric equipment outside at the end was attached. This is a production process 11.
[0050] By the above, production of a solar cell module as shown in drawing 1 was completed.
[0051] The conductive paste which is the material of the light-receiving side lateral electrode 205 is made to contain phosphorus compounds in order to realize low contact resistance with the surface of a silicon substrate 201. Moreover, a wrap 1st and the 2nd translucency resin 103a and 103b are made to contain phosphorus compounds for the solar-battery cell block 100 for antioxidizing. In the gestalt of this operation, what added phosphorus compounds in 0 - 2.0wt% to this EVA resin was used, using an ethylene-vinyl acetate system copolymer (EVA resin) as 1st and 2nd translucency resin 103a and 103b. As a sample, seven kinds of things which added 2.0wt%, respectively were used 0.5wt% 0.2wt% 0.1wt% 0.01wt% what does not add phosphorus compounds (0wt%), and 0.001wt%. Tris (nonylphenyl) phosphite was used as phosphorus compounds. In each sample, 1st translucency resin 103a and 2nd translucency resin 103b were taken as the same component. Moreover, eight kinds of things which added 4.0wt%, respectively were used 2.0wt% 1.0wt% 0.5wt% 0.1wt% 0.01wt% what does not add phosphorus compounds (0wt%), and 0.001wt% as a conductive paste (silver paste) for constituting the light-receiving side lateral electrode 205. Therefore, the total number of samples became 7x8=56 kind.
[0052] Next, it evaluated by carrying out a damp-proof and heat-resistant reliability trial to 56 kinds of solar cell modules produced as mentioned above. The result is shown in a table 1.
[0053]
[A table 1]

太陽電池モジュールの信頼性試験結果（作製直後）

導電性ペースト中のリン含有率（wt%） \ 透光性樹脂（EVA樹脂）中のリン含有率（wt%）	0.0	0.001	0.01	0.1	0.2	0.5	2.0	
0.0	○*, ** ⓐ	○**	○** ⓑ	○** ⓒ	○** ⓓ	× 黄色 黄褐色 0.9	× 剥離 剥離 0.4	←耐湿性試験 ←耐熱性試験 ←変換効率相対値
0.001	○*	○	○	○	× 黄色 黄褐色 0.9	× 黄色 黄褐色 0.9	× 剥離 剥離 0.4	←耐湿性試験 ←耐熱性試験 ←変換効率相対値
0.01	○*	○	○	○	× 黄色 黄褐色 0.9	× 黄褐色 褐色 0.8	× 剥離 剥離 0.4	←耐湿性試験 ←耐熱性試験 ←変換効率相対値
0.1	○* ⓔ	○	○ ⓕ	○ ⓖ	× 黄褐色 褐色 0.8 ⓗ	× 黄褐色 褐色 0.8	× 剥離 剥離 0.4	←耐湿性試験 ←耐熱性試験 ←変換効率相対値
0.5	○* ⓘ	○	○ ⓙ	○ ⓚ	× 黄褐色 褐色 0.8 ⓛ	× 褐色 褐色 0.7	× 剥離 剥離 0.4	←耐湿性試験 ←耐熱性試験 ←変換効率相対値
1.0	○* ⓜ	○	○ ⓝ	○ ⓞ	× 褐色 褐色 0.7 ⓟ	× 茶色 こげ茶 0.4	× 剥離 剥離 0.3	←耐湿性試験 ←耐熱性試験 ←変換効率相対値
2.0	○* ⓠ	× 黄褐色 褐色 0.8	× 黄褐色 褐色 0.8 ⓡ	× 褐色 褐色 0.7 ⓢ	× 褐色 褐色 0.7 ⓣ	× 茶色 こげ茶 0.4	× 剥離 剥離 0.2	←耐湿性試験 ←耐熱性試験 ←変換効率相対値
4.0	× 剥離 剥離 0.4	× 剥離 剥離 0.4	× 剥離 剥離 0.4	× 剥離 剥離 0.4	× 剥離 剥離 0.3	× 剥離 剥離 0.2	× 剥離 剥離 0.1	←耐湿性試験 ←耐熱性試験 ←変換効率相対値

[0054] In the table 1 showing the test result about each solar cell module, it is "O" about success as comprehensive evaluation, and "x" showed the rejection to the 1st line of eye each measure. About the thing of "x", the situation of change by the humidity test result to the 2nd line was indicated, the situation of change by the heat resistance test result to the 3rd line was indicated, and the relative value of the conversion efficiency of the solar cell module before and behind a reliability test was further indicated to the 4th line. It is shown that "*" attached beside "O" had discoloration on the level which does not have a problem in a translucency resin periphery practically. 0.95 was set up as a conversion efficiency relative value which is satisfactory practically although the ideal value of the relative value of the conversion efficiency before and behind a reliability trial is 1.0, and although it was less than 1.0, "**" showed the case where it was 0.95 or more. "O" without this "**" mark shows that a conversion efficiency relative value is about 1.00.

[0055] About the damp-proof reliability trial, it evaluated by leaving a solar cell module for 1000 hours in the testing machine held at the temperature of 85 degrees C, and 90% of humidity RH. An exterior change (existence of discoloration and exfoliation) was observed visually, that changeless was expressed with "O" mark in the table, and that changeful indicated the condition briefly while expressing it with "x" mark.

[0056] Moreover, about the heat-resistant reliability trial, it was left in the ambient atmosphere with a temperature of 120 degrees C for 1000 hours, and an exterior change was observed and evaluated. Like the case of a damp-proof trial, that changeless was expressed with "O" mark in the table, and that changeful indicated the condition briefly while expressing it with "x" mark.
[0057] Moreover, relative conversion efficiency with trial before was also indicated to this table.
[0058] The following conclusions can be drawn if a table 1 is seen.
[0059] (a) Evaluate on the basis of the Lynn content under conductive paste.
[0060] ** About the solar cell module which created the light-receiving side lateral electrode 205 from the conductive paste which does not contain Lynn at all - When Lynn is not contained at all in translucency resin (EVA resin) Although the discoloration which does not become a problem practically is produced, a conversion efficiency relative value amounts to 0.95 which does not become a problem practically. The Lynn content in translucency resin (EVA resin) - In not more than more than 0.001 0.2wt% When, as for the conversion efficiency relative value, the Lynn content in - translucency resin (EVA resin) which amounts to 0.95 which does not become a problem practically exceeded 0.2wt(s)%, the evaluation result that a conversion efficiency relative value did not amount to 0.95 was obtained.
[0061] However, since these solar cell modules do not contain Lynn at all during a conductive paste, they cannot realize low resistance to a silicon substrate, and cannot put it in practical use.
[0062] ** About the solar cell module with which the Lynn content created the light-receiving side lateral electrode 205 from the conductive paste of the range below more than 0.001wt%2.0wt% - When Lynn is not contained at all in translucency resin (EVA resin) The conversion efficiency relative value of a certain thing is set to about 1.00 by the discoloration which does not become a problem practically. - As for a conversion efficiency relative value, the Lynn content in translucency resin (EVA resin) is set to about 1.00 about the range below more than 0.001wt%0.2wt%. - The evaluation result that the Lynn content in translucency resin (EVA resin) did not amount to 0.95 in which a conversion efficiency relative value does not have a problem practically by discoloration becoming excessive more than at 0.2wt% was obtained.
[0063] However, since oxidation of EVA resin cannot be prevented, what does not contain Lynn at all in translucency resin (EVA resin) is unutilizable.
[0064] ** About the solar cell module with which the Lynn content created the light-receiving side lateral electrode 205 from the conductive paste beyond 2.0wt%, the evaluation result that there was no involvement in the Lynn content in - translucency resin (EVA resin), and a conversion efficiency relative value did not amount to 0.95 which is satisfactory practically was obtained. However, the Lynn content of a conductive paste is 2.0wt(s)%, and although the conversion efficiency relative value amounts to 0.95, since oxidation of translucency resin (EVA resin) cannot be prevented, it is unutilizable [what does not contain Lynn at all in translucency resin (EVA resin)] in this case.
[0065] (b) Evaluate on the basis of the Lynn content in translucency resin (EVA resin).
[0066] ** About the solar cell module which created the translucency resin which does not contain Lynn at all - When Lynn is not contained at all during a conductive paste Although the discoloration which does not become a problem practically is produced, a conversion efficiency relative value amounts to 0.95 which does not pose a problem practically. The Lynn content under conductive paste - In not more than more than 0.001wt%2.0wt% The evaluation result that it would not amount to 0.95, as for a conversion efficiency relative value if the Lynn content under - conductivity paste from which the conversion efficiency relative value of a certain thing is set to about 1.00 by the discoloration which does not become a problem practically exceeds 2.0wt(s)% was obtained.
[0067] However, since these solar cell modules do not contain Lynn at all in translucency resin, they cannot prevent oxidation of translucency resin (EVA resin), and cannot put it in practical use.
[0068] ** About the solar cell module with which the Lynn content created the translucency resin of the range below more than 0.001wt%2.0wt% - When Lynn is not contained at all during a conductive paste The Lynn content under - conductivity paste which amounts to 0.95 which does not become a problem practically a conversion efficiency relative value about the range below more than 0.001wt%2.0wt% When the Lynn content under - conductivity paste from which a conversion efficiency relative value is set to about 1.0 became more than 2.0wt%, the evaluation result that a conversion efficiency relative value did not amount to 0.95 which does not pose a problem practically was obtained.
[0069] ** About the solar cell module which created the translucency resin with which the Lynn content consists more than of 2.0wt%, there is no involvement in the Lynn content under conductive paste, and a conversion efficiency relative value does not amount to 0.95 which is satisfactory practically. In addition, although the Lynn content of translucency resin is 0.2wt(s)%, and the conversion efficiency relative value has become 0.95 or more when Lynn is not contained at all during a conductive paste, it is unutilizable by the ability not realizing low resistance to a silicon substrate in this case.
[0070] If the result of a reliability trial is judged synthetically, the Lynn content under conductive paste which constitutes a light-receiving side lateral electrode is 1.0wt(s)%, and the solar cell module (o of a sign) whose Lynn content in wrap translucency resin (EVA resin) is 0.1wt(s)% can consider that the solar-battery cell block 100 is the best thing of a property.
[0071] Next, and the solar cell module with a sufficient property The Lynn content under conductive paste at 0.1wt(s)% And the thing whose Lynn content in translucency resin is 0.01wt(s)% or 0.1wt(s)% (f of a sign, g), The Lynn content under conductive paste at 0.5wt(s)% And the thing whose Lynn content in translucency resin is 0.01wt(s)% or 0.1wt(s)% (j of a sign, k), And the Lynn content under conductive paste can regard it as that (n of a sign) whose Lynn content in translucency resin is 0.01wt(s)% at 1.0wt(s)%.
[0072] And if the Lynn content of translucency resin is less than [0.2wt%], it can be considered that the

property that it is satisfactory especially as a solar cell module is acquired. Similarly, if the Lynn content of ε conductive paste is less than [2.0wt%], it can be considered that the property that it is satisfactory especially as a solar cell module is acquired.
[0073] The horizontal axis was made into the Lynn content under conductive paste for the test result of a table 1, and when the axis of ordinate was made into the Lynn content in translucency resin and was expressed with the graph, it became like drawing 4 . Sign a-t in a table 1 and sign a-t in drawing 4 correspond. The plot is omitted, when it is the case where the Lynn content on declared relation and under conductive paste is 0.001wt(s)%, and 0.01wt(s)%, and when the Lynn content in translucency resin is 0.001wt(s)%.
[0074] In drawing 4 , o is in best content combination mode of a property. The field 400 enclosed with the dotted line which connected f-g-k-n-j-f, and its near field are in content combination mode with a sufficient property next. And in the white field 401 which connected a-b-c-d-o-q-m-i-e-a, the field of an except is in content combination mode which is passing on the segment (the Lynn content in translucency resin is the segment of zero) which connects d-c-b-a, and the segment (the Lynn content under conductive paste is the segment of zero) which connects a-e-i-m-q. In this white field 401, discoloration (yellowing) was not produced in 1st translucency resin 103a [near the light-receiving side lateral electrode 205]. Moreover, in the field 402 of lower right sense hatching to which d-h-l-p-t-s-r-q-o-d was connected, it is in content combination mode in which the field of an except is passing mostly, on the line which connects d-h-l-p-t, and the line which connects t-s-r-q. The field 404 of lower left sense hatching other than the above is in content combination mode used as a rejection.
[0075] Lynn content Ppas under conductive paste which constitutes the light-receiving side lateral electrode 205 for the solar-battery cell block 100 which comes to connect a photovoltaic cell 101 about discoloration (yellowing) of wrap translucency resin (EVA resin) Lynn content PEVA in translucency resin (EVA resin) In between, it turns out that there is close relation.
[0076] In addition, the equation of the straight line which connects, white boundary, i.e., d-q, of a field 401, is calculated. Lynn content Ppas under conductive paste which is a horizontal axis Lynn content PEVA in the translucency resin which it expresses with x and is an axis of ordinate It expresses with y. a bordering equation -- y=-(0.2/2)x+0.2 -- if this is solved -- y= x+102 white field 401 -- x+10y<=2x -- Ppas it is -- y -- PEVA If it rewrites Ppas+10PEVA <=2 (however, PPAS!=0, PEVA!=0) .... (1)
It is the inequality showing the white field 401 applicable to the solar cell module with which this did not produce discoloration (yellowing) to translucency resin (EVA resin), but maintained 0.95 or more conversion efficiency relative values.
[0077] If this (1) type is evaluated qualitatively, it is the Lynn content Ppas under conductive paste. Lynn content PEVA in translucency resin (EVA resin) Although it becomes the conditions as orientation that tota value is below a predetermined value the total value -- asking -- facing -- Ppas PEVA Not simple addition but Ppas PEVA weight -- differing -- PEVA the direction -- Ppas 10 times -- many -- influence -- **** -- I hear that it is and it is. Although the straight line of the boundary of the white field 401 is 45 degrees in drawing 4 , for the graduation of the y-axis, having dropped to 1/10 is PEVA to the graduation of a x axis. It is shown that effect is 10 times larger.
[0078] Diffusion of the silver from the conductive paste with which the discoloration in translucency resin (yellowing) constitutes a light-receiving side lateral electrode to the inside of translucency resin is the cause. The degree of diffusion of the silver is based on the Lynn content. since the discoloration in translucency resin (yellowing) poses a problem -- Lynn content PEVA in translucency resin the direction -- Lynn content Ppas under conductive paste it is presumed that nearby influence is large -- having -- (1) type -- the presumption -- the right -- things will be supported.
[0079] By the way, in the process which solidifies the conductive paste from the phase of the spreading, the solvent evaporates gradually. Therefore, the Lynn content under conductive paste in the level of the solidification used as a practical use phase must be higher than the Lynn content of the phase of spreading shown by the table 1 and drawing 4 . The result of having investigated this is shown in a table 2 and drawing 5 . Change of the Lynn content in the light-receiving side lateral electrode which was able to solidify and do the conductive paste was as follows. 0. They are 001wt%->0.0013wt%, 0.01wt%->0.013wt%, 0.1wt%->0.13wt%, 0.5wt%->0.66wt%, 1.0wt%->1.3wt%, 2.0wt%->2.6wt%, and 4.0wt%->5.2wt%. It is about 13% of content rise. In addition, an eternal thing cannot be overemphasized about the Lynn content in translucency resin (EVA resin).
[0080]
[A table 2]

太陽電池モジュールの信頼性試験結果（完成品段階）

受光面側電極中のリン含有率（wt%）	透光性樹脂（EVA樹脂）中のリン含有率（wt%）						
	0.0	0.001	0.01	0.1	0.2	0.5	2.0
0.0	○*, ** ⓐ	○**	○** ⓑ	○** ⓒ	○** ⓓ	× 黄色 黄褐色 0.9	× 剥離 剥離 0.4
	←耐湿性試験 ←耐熱性試験 ←変換効率相対値						
0.0013	○*	○	○	○	× 黄色 黄褐色 0.9	× 黄色 黄褐色 0.9	× 剥離 剥離 0.4
	←耐湿性試験 ←耐熱性試験 ←変換効率相対値						
0.013	○*	○	○	○	× 黄色 黄褐色 0.9	× 黄褐色 褐色 0.8	× 剥離 剥離 0.4
	←耐湿性試験 ←耐熱性試験 ←変換効率相対値						
0.13	○* ⓒ	○	○ ⓕ	○ ⓔ	× 黄褐色 ⓗ 褐色 0.8	× 黄褐色 褐色 0.8	× 剥離 剥離 0.4
	←耐湿性試験 ←耐熱性試験 ←変換効率相対値						
0.66	○* ⓘ	○	○ ⓘ	○ ⓚ	× 黄褐色 ⓛ 褐色 0.8	× 褐色 褐色 0.7	× 剥離 剥離 0.4
	←耐湿性試験 ←耐熱性試験 ←変換効率相対値						
1.3	○* ⓜ	○	○ ⓝ	○ ⓞ	× 褐色 ⓟ 褐色 0.7	× 茶色 こげ茶 0.4	× 剥離 剥離 0.3
	←耐湿性試験 ←耐熱性試験 ←変換効率相対値						
2.6	○* ⓠ	× 黄褐色 褐色 0.8	× 黄褐色 ⓡ 褐色 0.8	× 褐色 褐色 0.7	× 褐色 ⓢ 褐色 0.7	× 茶色 こげ茶 0.4	× 剥離 剥離 0.2
	←耐湿性試験 ←耐熱性試験 ←変換効率相対値						
5.2	× 剥離 剥離 0.4	× 剥離 剥離 0.4	× 剥離 剥離 0.4	× 剥離 剥離 0.4	× 剥離 剥離 0.3	× 剥離 剥離 0.2	× 剥離 剥離 0.1
	←耐湿性試験 ←耐熱性試験 ←変換効率相対値						

[0081] If the result of a table 2 is judged synthetically, the Lynn content in light-receiving side lateral electrode 103a is 1.3wt(s)%, and the solar cell module (o of a sign) whose Lynn content in wrap translucency resin (EVA resin) is 0.1wt(s)% can consider that the solar-battery cell block 100 is the best thing of a property.

[0082] Next, and the solar cell module with a sufficient property The Lynn content in light-receiving lateral electrode 103a at 0.13wt(s)% And the thing whose Lynn content in translucency resin is 0.01wt(s)% or 0.1wt(s)% (f of a sign, g), The Lynn content in light-receiving lateral electrode 103a at 0.66wt(s)% And the thing whose Lynn content in translucency resin is 0.01wt(s)% or 0.1wt(s)% (j of a sign, k), And the Lynn content in light-receiving lateral electrode 103a can regard it as that (n of a sign) whose Lynn content in translucency resin is 0.01wt(s)% at 1.3wt(s)%.

[0083] And if the Lynn content of translucency resin is less than [0.2wt%], it can be considered that the property that it is satisfactory especially as a solar cell module is acquired. Similarly, if the Lynn content of light-receiving lateral electrode 103a is less than [2.6wt%], it can be considered that the property that it is satisfactory especially as a solar cell module is acquired.

[0084] A dash "-" is added to the sign of each field in drawing 4 , and both correspondence relation is shown in the sign of each field in drawing 5 . The horizontal axis has "the Lynn content (wt%) of a light-receiving

side lateral electrode." if it asks for the equation of the boundary of white field 401' like the above -- y=-(0.2/2.6)x+0.2 -- if this is solved, y= 5x+65 13 white field 401' It is Ppas about 5x+65y<=13x. It is PEVA about y. If it divides by 5 in order to double 5Ppas+65PEVA <=13 (1) type and an expression, if it rewrites Ppas+13PEVA <=2.6 (however, PPAS!=0, PEVA!=0) .... (2)
It is the inequality showing white field 401' at which this will not produce discoloration (yellowing) to translucency resin (EVA resin), but will maintain 0.95 or more conversion efficiency relative values about the completed solar cell module which the conductive paste solidified to the practical use phase.
[0085] If this (2) type is evaluated qualitatively, it is the Lynn content Ppas in a light-receiving side lateral electrode. Lynn content PEVA in translucency resin (EVA resin) Although it becomes the conditions as orientation that total value is below a predetermined value the solar cell module completed by facing in quest of the total value -- setting -- Ppas PEVA PEVA the direction -- Ppas 13 times -- many -- influence -- **** -- I hear that it is and it is.
[0086] About the claim which starts the manufacture method of the solar cell module as a "method" on the basis of a table 2 and drawing 5 about the claim concerning the solar cell module as a "object", it must be based on a table 1 and drawing 4 so that it may become clear from the comparison of the above table 1 and a table 2, and the comparison of drawing 4 and drawing 5 .
[0087] Since the content of the phosphorus compounds under conductive paste which constitutes the content and the light-receiving side lateral electrode 205 of phosphorus compounds in wrap translucency resin (EVA resin) 103a and 103b for the solar-battery cell block 100 as mentioned above is adjusted to the proper range obtained by the experimental result, even if it does not coat a light-receiving side lateral electrode with a solder block, discoloration (yellowing) of translucency resin [/ near the light-receiving side lateral electrode] can be lost, and conversion efficiency of a solar battery can be made high. And since a solder coating production process can be skipped, while attaining simplification of structure, productivity can be improved and a cost cut can be attained.
[0088] In addition, although preventing direct contact to an electrode and translucency resin is also considered by covering a light-receiving side lateral electrode with a resin film through adhesives, without using a solder block, with such a configuration, the production process of resin film covering is needed instead of a solder coating production process, and it does not contribute to improvement in productivity. Moreover, while causing complication of structure, it is disadvantageous for a cost cut.
[0089] In addition, although it had indicated similarly that 1st translucency resin 103a and 2nd translucency resin 103b adjusted the Lynn content with the above-mentioned gestalt of operation If this invention should just adjust the Lynn content and it does so at least to 1st translucency resin 103a in a light-receiving side side Discoloration (yellowing) of the effect same with having mentioned above, i.e., translucency resin [/ near the light-receiving side lateral electrode], can be lost, and conversion efficiency of a solar battery can be made high.
[0090] In the gestalt of the above operation, it has explained on the assumption that a silver paste is used as a conductive paste, but even if it is in the thing containing other components, for example, gold, copper, etc. as a conductive paste, it is presumed that the same effect is expectable. However, generally discoloration (yellowing) of translucency resin writes not being generated in addition from tin and lead which are aluminum or a solder component.
[0091]
[Effect of the Invention] Although the solar cell module concerning this invention has the configuration covered by the translucency resin by which the photovoltaic cell which has the electrode constituted from a conductive paste which contained phosphorus compounds in the light-receiving side side contained phosphorus compounds Since the Lynn content of the translucency resin which constitutes a light-receiving side lateral electrode is less than 0.2 percentage by weight according to the solar cell module of claim 1 Since discoloration (yellowing) of translucency resin [/ near the light-receiving side lateral electrode] is lost, conversion efficiency of a solar battery is made with a high thing and a solder coating production process is skipped even if it covers a light-receiving side lateral electrode neither with solder nor a resin film, structure simplification and a cost cut can be attained.
[0092] Since the Lynn content of the light-receiving side lateral electrode which consisted of conductive pastes is less than 2.6 percentage by weight according to the solar cell module of claim 2, discoloration (yellowing) of translucency resin [/ near the light-receiving side lateral electrode] is lost, conversion efficiency of a solar battery is made with a high thing like the above and a solder coating production process is skipped, structure simplification and a cost cut can be attained.
[0093] Since according to the solar cell module of claim 3 the Lynn content of translucency resin is less than 0.2 percentage by weight, the Lynn content of the light-receiving side lateral electrode which consisted of conductive pastes has become less than 2.6 percentage by weight, discoloration (yellowing) of translucency resin [/ near the light-receiving side lateral electrode] is lost, conversion efficiency of a solar battery is more strictly made with a high thing and a solder coating production process is skipped, structure simplification and a cost cut can be attained.
[0094] The solar cell module of claim 4 is the Lynn content PEVA of translucency resin. Lynn content Ppas of the light-receiving side lateral electrode which consisted of conductive pastes As relation Since the conditions of Ppas+13PEVA <=2.6 (however, PPAS!=0, PEVA!=0) are fulfilled Since discoloration (yellowing) of translucency resin [/ near the light-receiving side lateral electrode] is lost, conversion efficiency of a solar battery is made with a high thing still more strictly and a solder coating production process is skipped, structure simplification and a cost cut can be attained.
[0095] Since the Lynn content is made into less than 0.2 percentage by weight for sufficient surface [to

prevent discoloration (yellowing) of the translucency resin near / used as a technical problem / the light-receiving side lateral electrode] side of a photovoltaic cell only about the translucency resin of a wrap 1st according to the solar cell module of claim 5, without seldom being caught by the description of the 2nd translucency resin on a background, a solder coating production process is skipped and structure simplification and a cost cut can be attained.
[0096] According to the solar cell module of claim 6, said electrode contains silver, it is resin with which translucency resin consists of an ethylene-vinyl acetate system copolymer (EVA), and the effect of preventing discoloration (yellowing) of translucency resin only by the quality governing is demonstrated as expected, using the general thing as a material which constitutes a solar cell module.
[0097] The manufacture method of the solar cell module concerning this invention Although it is the method of manufacturing a solar cell module by covering a photovoltaic cell with the translucency resin containing phosphorus compounds after forming an electrode at least in one side of front reverse side both sides of the substrate of a photovoltaic cell with the conductive paste containing phosphorus compounds Since the diffusion to said translucency resin of the metal component contained in said electrode is controlled by adjusting the Lynn content of said translucency resin according to the manufacture method of the solar cell module of claim 7 Since the diffusion to said translucency resin of the metal component contained in an electrode by the easy method of adjustment of the Lynn content in translucency resin is controlled According to the manufacture method of the solar cell module of claim 8 which can aim at improvement in productivity, and the cost cut of a product, the Lynn content uses the translucency resin of 0.2 or less percentage by weight as translucency resin. A photovoltaic cell by that of a wrap Discoloration (yellowing) of the translucency resin near the electrode can be prevented, conversion efficiency of a solar battery can be made high, and yet, a solder coating production process can be skipped, and while improving productivity, the cost cut of a product can be aimed at.
[0098] Since the diffusion to said translucency resin of the metal component contained in an electrode is controlled by adjusting the Lynn content of an electrode according to the manufacture method of the solar cell module of claim 9, improvement in productivity and the cost cut of a product can be aimed at.
[0099] According to the manufacture method of the solar cell module of claim 10, since the Lynn content forms a light-receiving side lateral electrode, using the conductive paste of less than 2.0 percentage by weight as a conductive paste, like the above, discoloration (yellowing) of the translucency resin near the light-receiving side lateral electrode can be prevented, conversion efficiency of a solar battery can be made high, and yet, a solder coating production process can be skipped, and while improving productivity, the cost cut of a product can be aimed at.
[0100] According to the manufacture method of the solar cell module of claim 11, while the Lynn content forms an electrode, using the conductive paste of less than 2.0 percentage by weight as a conductive paste, using the translucency resin of less than 0.2 percentage by weight as translucency resin, the Lynn content can prevent discoloration (yellowing) of the translucency resin near the electrode for a photovoltaic cell more strictly at that of a wrap, and can make conversion efficiency of a solar battery high. Of course, improvement in productivity and the cost cut of a product can be aimed at by the abbreviation of a solder coating production process.
[0101] According to the manufacture method of the solar cell module of claim 12, it is the Lynn content PEVA of translucency resin. Lynn content Ppas of a conductive paste Since the translucency resin and the conductive paste which fulfill the conditions of Ppas+10PEVA <=2 (however, PPAS!=0, PEVA!=0) are used as relation, still more strictly, discoloration (yellowing) of the translucency resin near the electrode can be prevented, and conversion efficiency of a solar battery can be made high. Of course, improvement in productivity and the cost cut of a product can be aimed at by the abbreviation of a solder coating production process.

[Translation done.]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the cross section showing the structure of the outline of the crystal silicon system solar cell module concerning the gestalt of 1 operation of this invention.
[Drawing 2] It is the cross section showing the structure of the photovoltaic cell of the gestalt of operation.
[Drawing 3] It is the flow chart of the outline which shows the manufacture method of the solar cell module in the case of the gestalt of operation.
[Drawing 4] It is the graph which shows the relation between the Lynn content under conductive paste in early stages of [about two or more solar cell modules which were examined in the case of the gestalt of operation] production, and the Lynn content in translucency resin.
[Drawing 5] It is the graph which shows the relation between the Lynn content in the light-receiving side lateral electrode made from the conductive paste in the finished-product phase about two or more solar cell modules which were examined in the case of the gestalt of operation, and the Lynn content in translucency resin.
[Drawing 6] It is the cross section showing the structure of the outline of the conventional silicon system solar cell module.
[Drawing 7] It is the cross section showing the more detailed structure of the conventional photovoltaic cell.

[Description of Notations]
100 .... Solar-battery cell block
101 .... Photovoltaic cell
103a -- 1st translucency resin (EVA resin)
103b -- 2nd translucency resin (EVA resin)
205 .... Light-receiving side lateral electrode
PEVA .... Lynn content in translucency resin
Ppas .... Lynn content under conductive paste

[Translation done.]